

FIG. 1

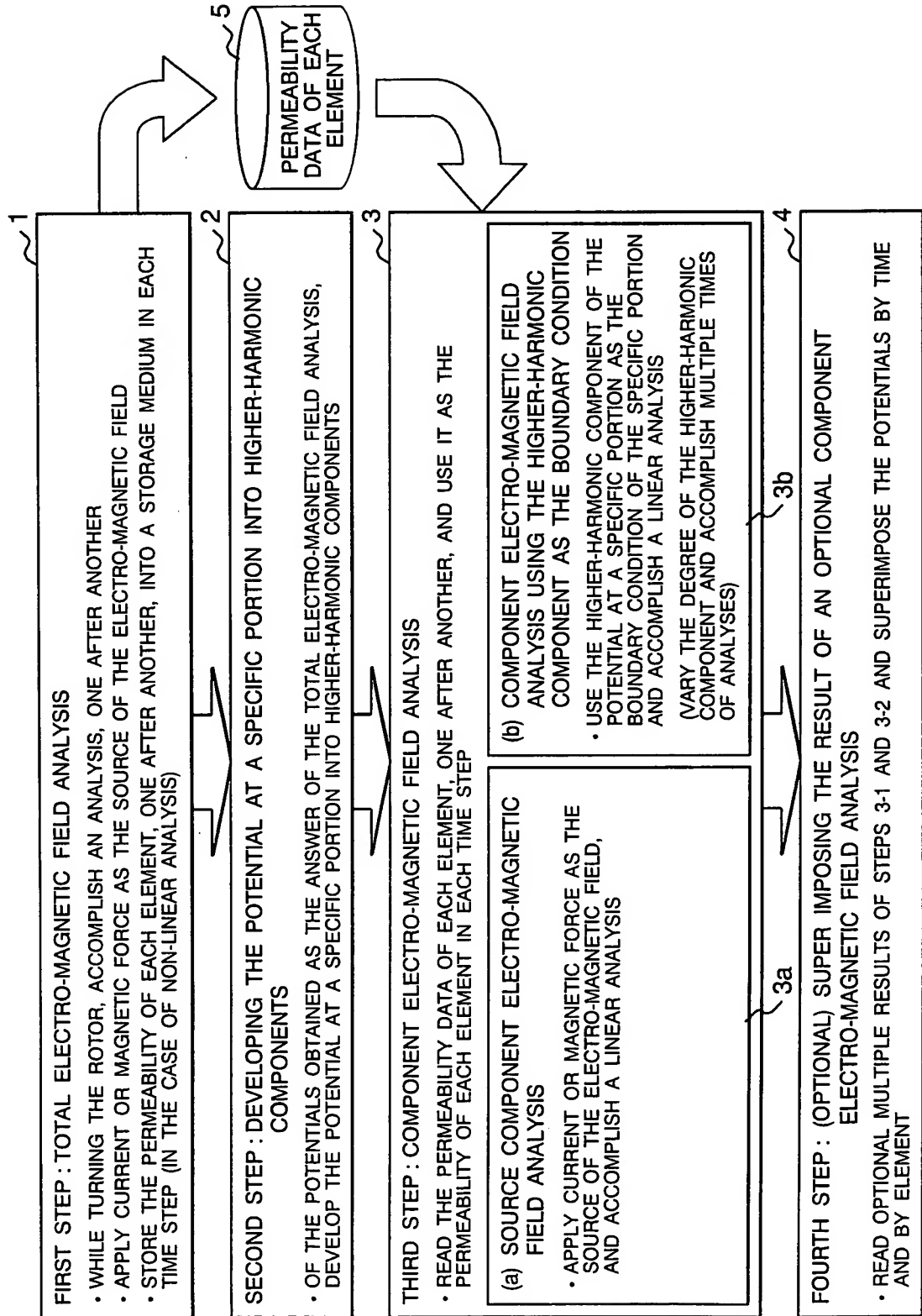


FIG. 2

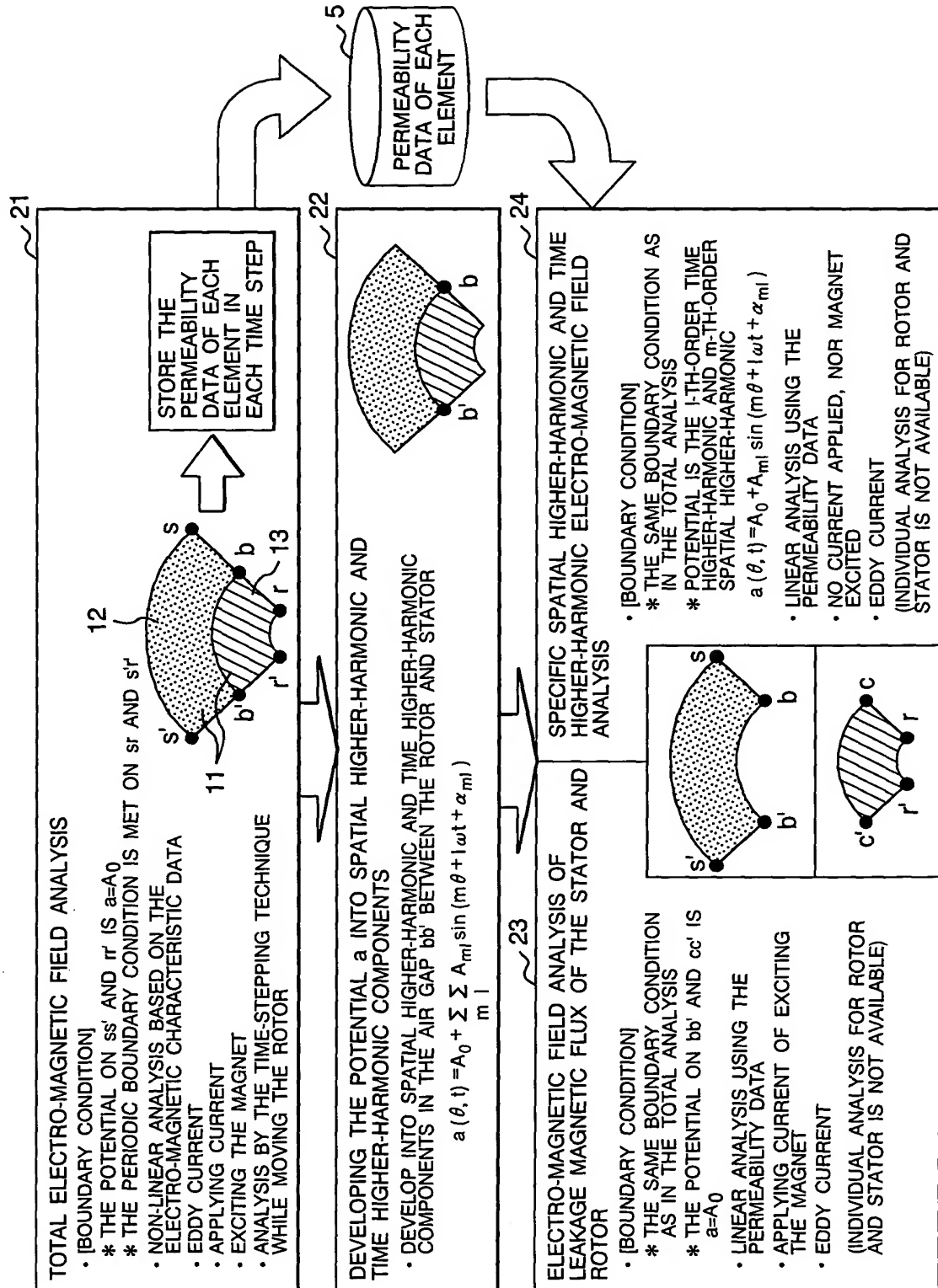


FIG. 3

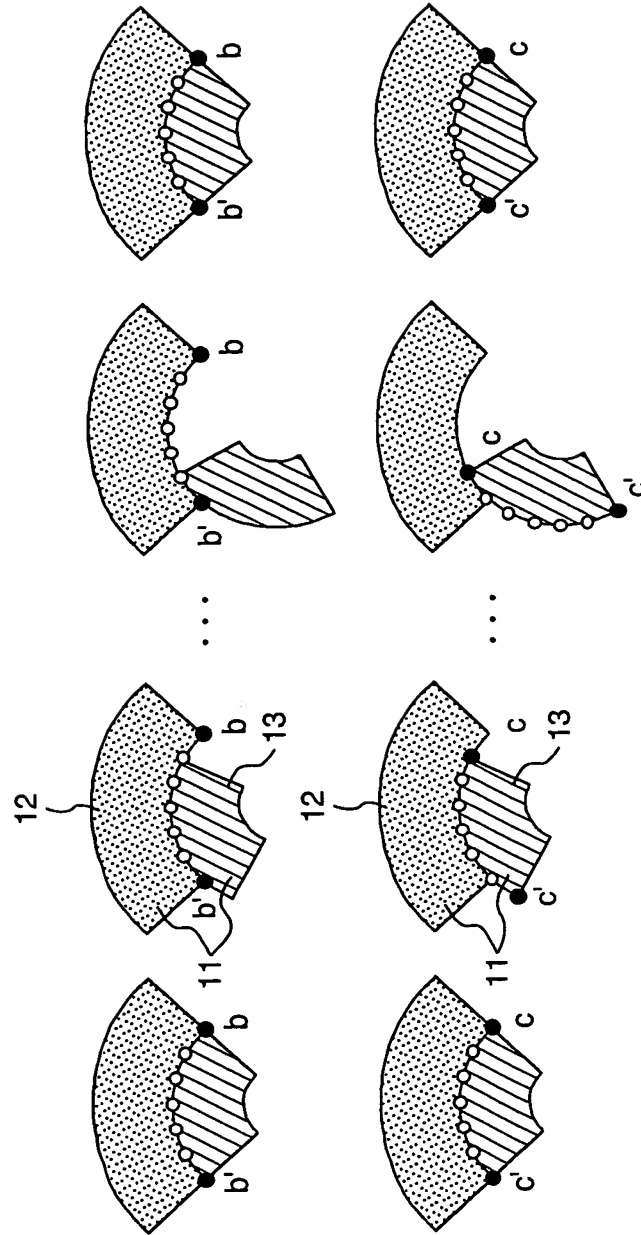


FIG. 4

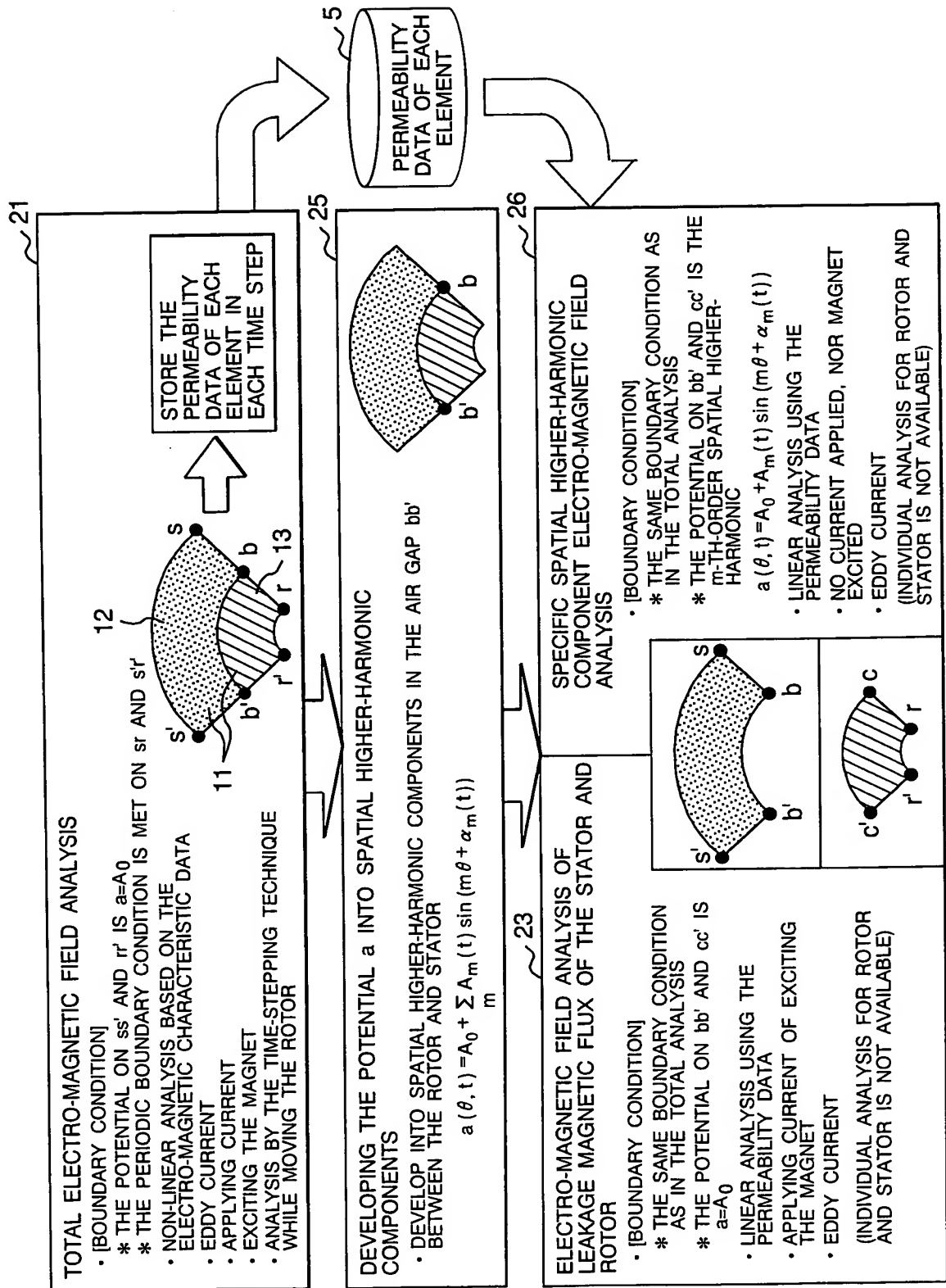


FIG. 5

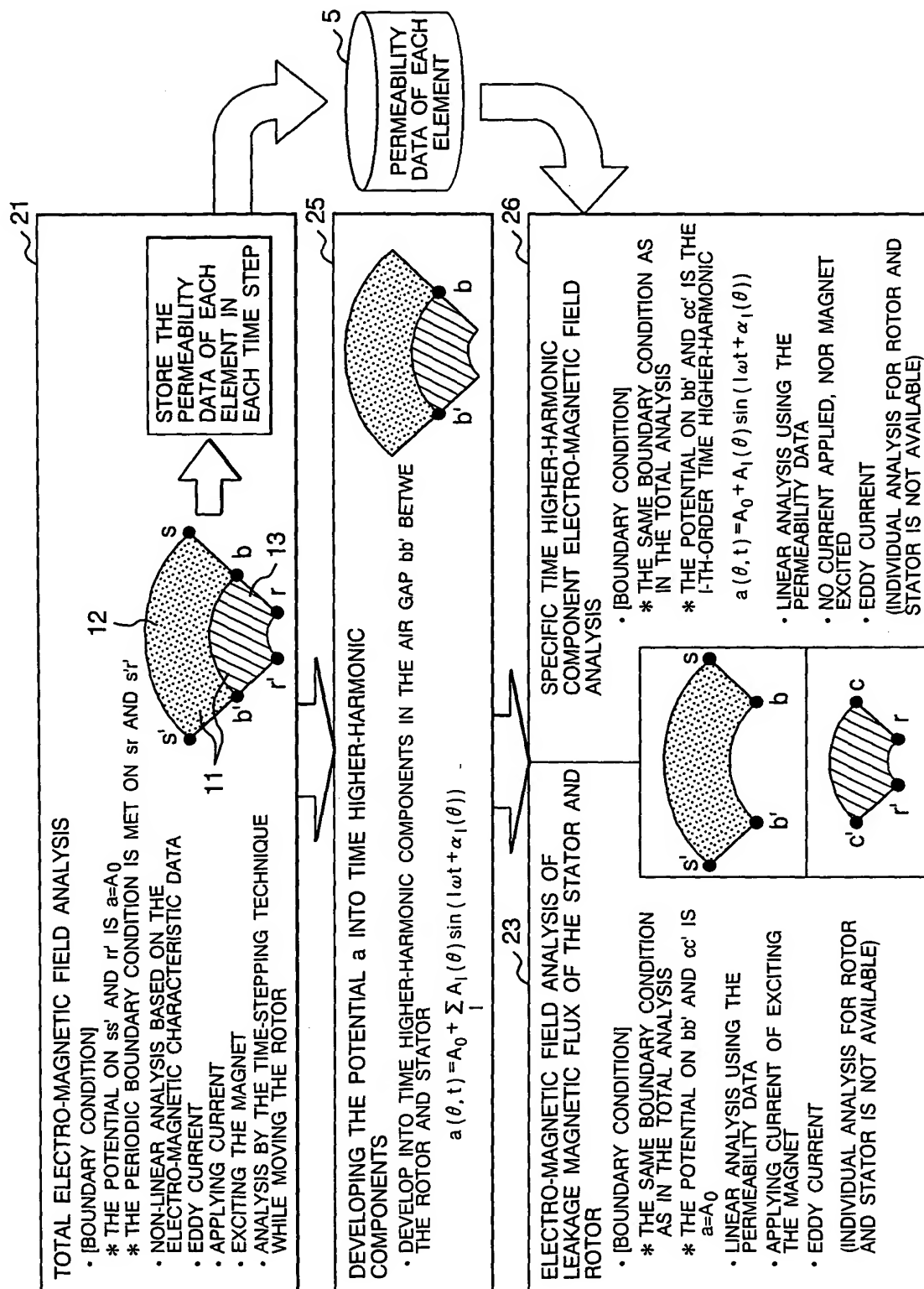
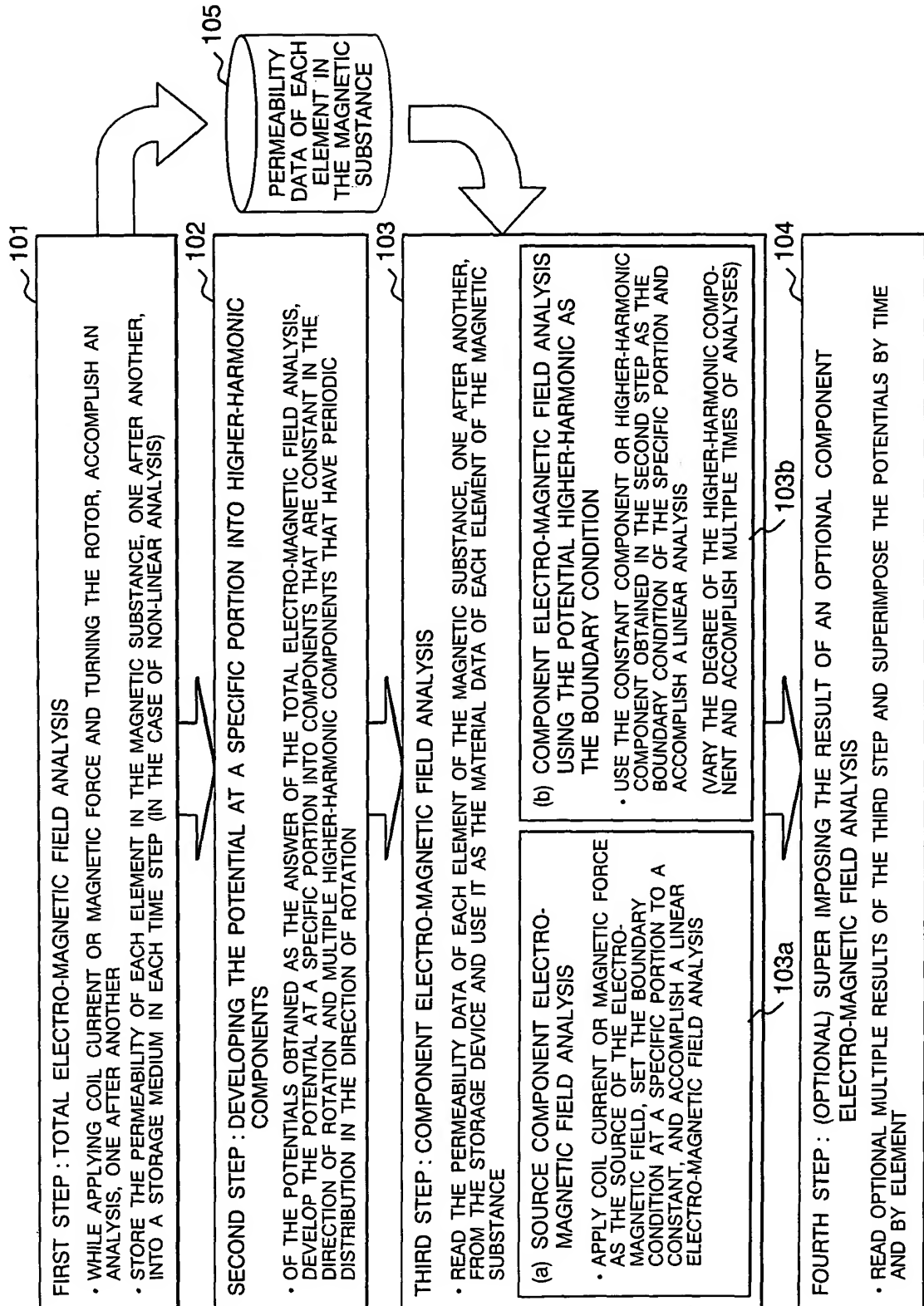


FIG. 6



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TOTAL ELECTRO-MAGNETIC FIELD ANALYSIS

- [BOUNDARY CONDITION]
- * THE POTENTIAL ON THE OUTSIDE PERIPHERAL SURFACE ss' AND INSIDE PERIPHERAL SURFACE rr' IS $a(\theta, z, t) = 0$
- * THE SURFACE sr AND SURFACE $s'r'$ ARE CONNECTED AT THE PERIODIC BOUNDARY 111
- ANALYSIS BY THE TIME-STEPPING TECHNIQUE WHILE MOVING THE ROTOR AND TAKING INTO ACCOUNT THE MAGNETIC SATURATION

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DEVELOPING THE POTENTIAL $a(\theta, z, t)$ INTO SPATIAL HIGHER-HARMONIC AND TIME HIGHER-HARMONIC COMPONENTS

- DEVELOP INTO SPATIAL HIGHER-HARMONIC COMPONENTS AND TIME HIGHER-HARMONIC COMPONENTS ON THE SLIDING SURFACE bb' BETWEEN THE ROTOR AND STATOR

$$a(\theta, z, t) = \sum_m \sum_l A_{ml}(z) \sin(m\theta + l\omega t + \alpha_{ml})$$

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ELECTRO-MAGNETIC FIELD ANALYSIS OF THE LEAKAGE MAGNETIC FLUX OF STATOR AND ROTOR

- [BOUNDARY CONDITION BETWEEN ROTOR AND STATOR]
- * THE POTENTIAL ON THE SURFACE bb' AND SURFACE cc' IS $a(\theta, z, t) = 0$

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ELECTRO-MAGNETIC FIELD ANALYSIS OF SPECIFIC SPATIAL HIGHER-HARMONIC COMPONENT AND TIME HIGHER-HARMONIC COMPONENT

- [BOUNDARY CONDITION BETWEEN ROTOR AND STATOR]
- * POTENTIAL IS THE l -TH-ORDER TIME HIGHER-HARMONIC AND m -TH-ORDER SPATIAL HIGHER-HARMONIC

$$a(\theta, z, t) = A_{ml}(z) \sin(m\theta + l\omega t + \alpha_{ml})$$

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PERMEABILITY DATA OF EACH ELEMENT IN THE MAGNETIC SUBSTANCE

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STORE THE PERMEABILITY DATA OF EACH ELEMENT IN THE MAGNETIC SUBSTANCE IN EACH TIME STEP

FIG. 8

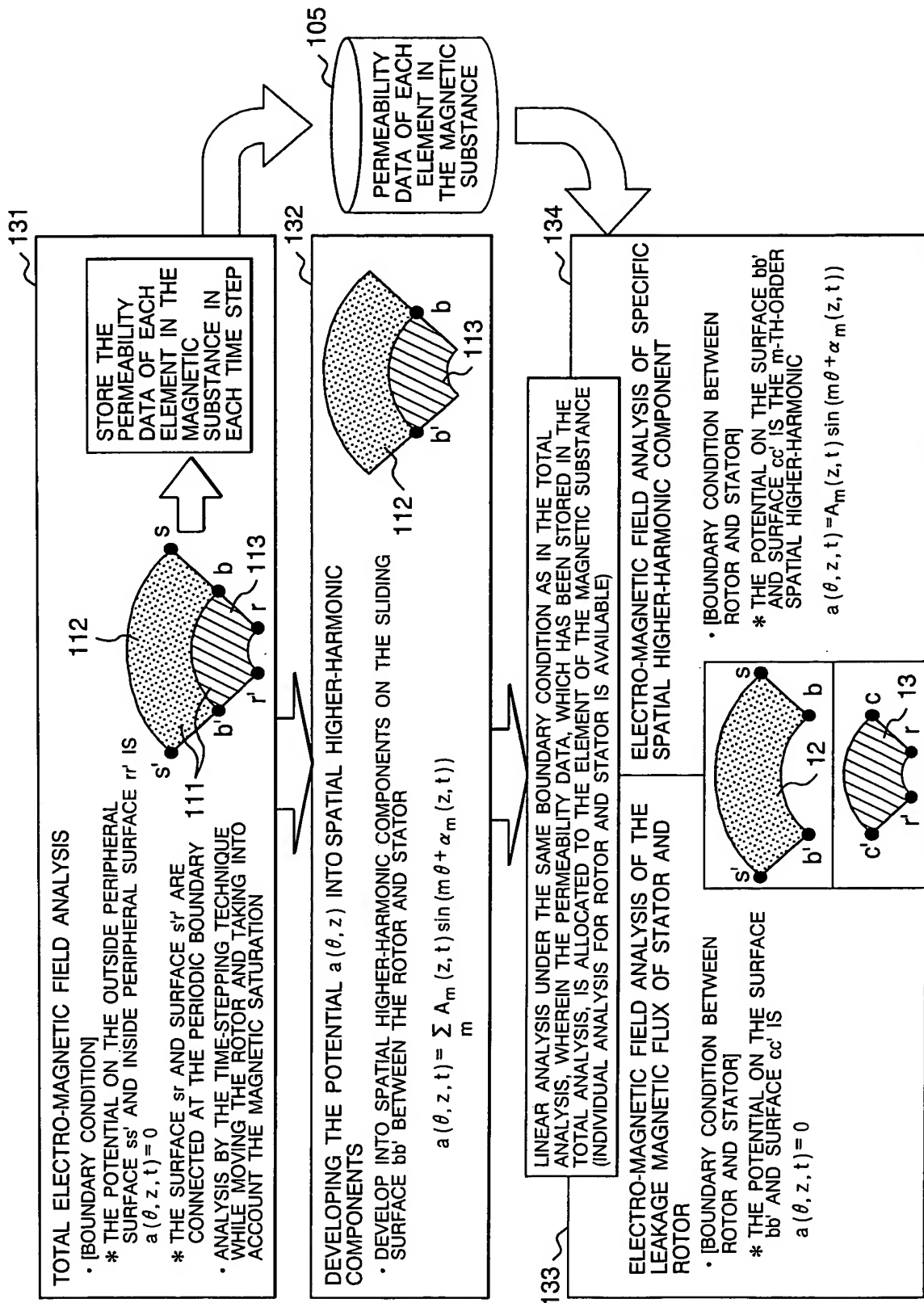


FIG. 9

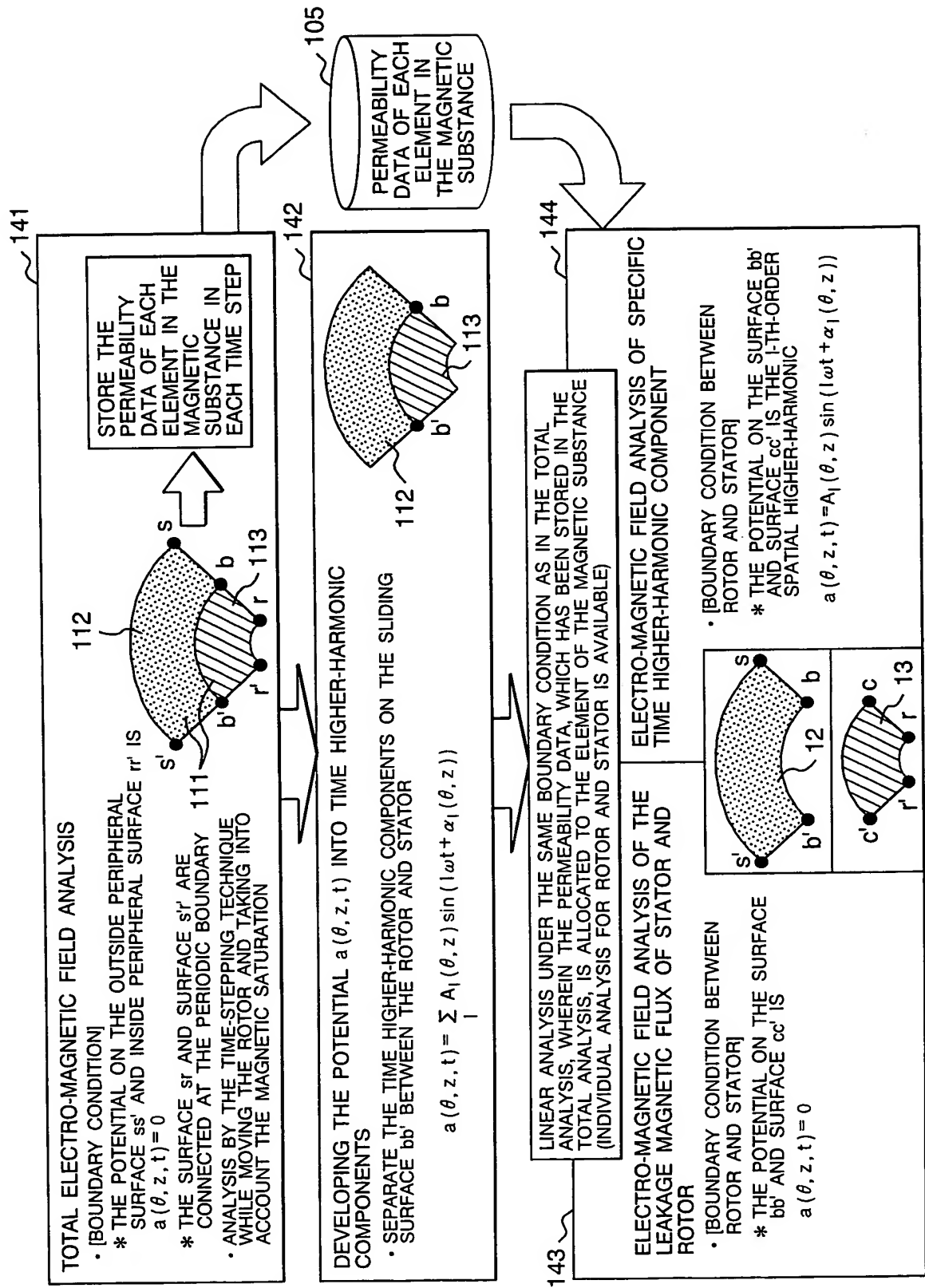


FIG. 10

